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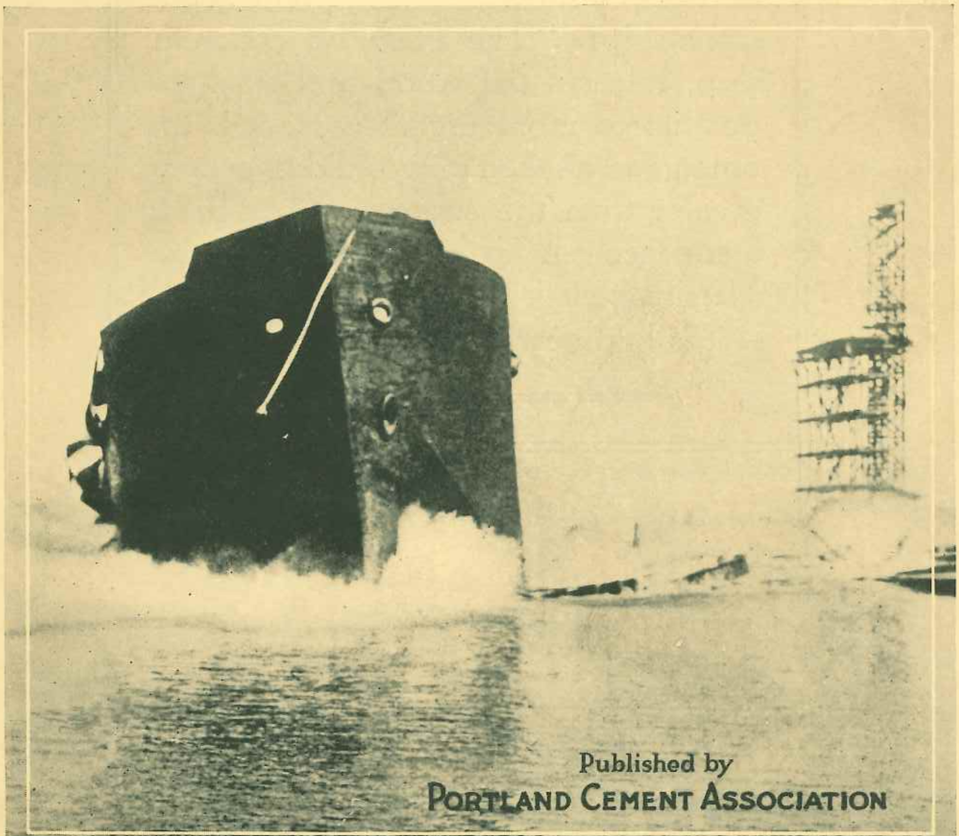
The Reinforced CONCRETE Cargo STEAMSHIP FAITH

The LARGEST CONCRETE VESSEL AFLOAT



Published by
PORTLAND CEMENT ASSOCIATION

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New Concrete Ship Spells Bad News for Kaiser

By WILLIS POLK*

IN simple language and in words of one syllable, so that he who runs may read, or those that sit still may comprehend—a match will float, a tack will sink, hence the primitive wooden ship, thence the marvel of the iron ship—now the incomprehensible stone ship! "The *Faith*," a concrete ship, releases the wood and steel industries to more urgent uses; it is an omen and a token of world democracy greater than the submarine has been a menace—it is the Monitor vs. the Merrimac; it is history repeating itself—it is bad news for the Kaiser.

(From San Francisco Chronicle, March 16, 1918)

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* *Mr. Polk is one of our Country's leading Architects.*

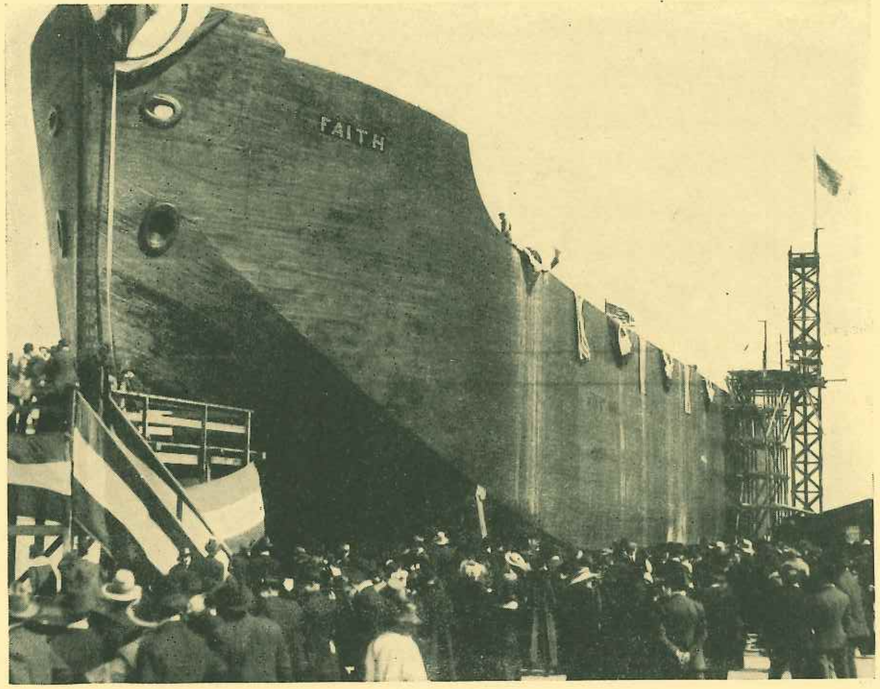
The Reinforced Concrete Cargo Steamship *Faith*

MAKING HISTORY

March 14, 1918, is likely to go down into history. On that day the largest reinforced concrete ship that the world has yet seen was launched at Redwood City, Cal. For weeks this event had been awaited with interest that was truly nation-wide.

The *San Francisco Chronicle* of March 15, in a news article describing the event, said:

"The 5000-ton concrete vessel ***Faith***, by ten times the largest ship of stone ever built, slipped into the bay at Redwood City at 2 o'clock yesterday afternoon and floated, and thus began a new era in the shipbuilding of the world.



The *Faith* as she appeared March 14, 1918, just preliminary to the launching. Thousands of persons from all parts of the country witnessed this event.

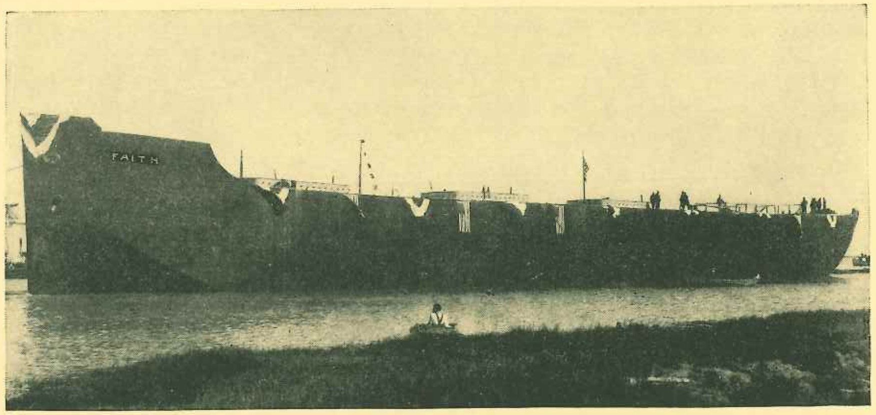
"The ***Faith***, launched broadside from a meadow that ran to the water's edge, rolled until the water was within a foot of her top, and then, after a breathless moment, slowly righted herself.

"Thousands of persons, ashore and in boats, saw concrete advance to rank with steel and wood as a material for building ships. The whole shipping world watched, to see if the ***Faith*** would sink or float. * * *

‘‘Something less than a century ago thousands of persons flocked to the banks of the Clyde to see the launching of the first steel ship. They expected to see the vessel sink beneath the waves, and were disappointed.

‘‘Those who saw the *Faith* leave the ways yesterday afternoon likewise saw the beginning of a new epoch in shipbuilding. But they expected to see the vessel float, and it did.

‘‘Slowly the big ship steadied herself. Two tugs that had retired to safety, beyond the reach of the launching wave, steamed in and cast lines to the six men aboard. Three aeroplanes from the Redwood City Aviation School flew to the *Faith* and circled over her.



After the Launching. The *Faith* floating in Pacific waters.

‘‘Then a strange thing happened. A great flock of gulls that had followed the Napa Valley on her trip from San Francisco suddenly deserted the steamer in a body and flew to the concrete hull.

‘‘The Napa Valley, tired of waiting for high tide, pulled out of the mud, as the two tugs steamed slowly and carefully out of the sloughs, drawing the *Faith*. In the bay the steamer waited for the slow-going *Faith* to pass her, then steamed ahead and passed the hull, while her passengers cheered the new vessel out of sight.

‘‘The gulls hovered over the *Faith* on the long trip to the Union Iron Works wharves, where the concrete vessel's engines will be installed.

“A large number of naval officers and shipbuilders watched the launching of the *Faith*. They cheered wildly the dawn of the concrete era in ship construction.

‘‘‘We are 50 per cent on the way to success,’ Comyn said, as the great hull rested motionless in the water before him. ‘When the first steel vessels were built, it was said they would not float, or if they did, would be too heavy for service. Now they say the same thing about concrete. But all the engineers we have taken over the hull — among them many who said it was impossible at first — now agree that it is a success.

“At the Union Iron Works triple expansion engines capable of developing 1760 horse-power will be installed in the *Faith*. Then she will be ready for that which Comyn terms ‘the other 50 per cent of the test.’ She will take a full cargo and make a transpacific trip. She will be ready about June 1.

‘‘Empty, the heavy concrete vessel, which is thirty feet deep, drew nine feet of water. Loaded to capacity of 5000 tons of cargo, the *Faith* will draw twenty-four feet of water. Her designers believe the *Faith* is so heavy that no ballast will be necessary; there is no provision for carrying ballast in her structure.

‘‘The storms of the Pacific will test the *Faith*. The stresses and strains that concrete vessels must meet never have been determined, and the second half of the experiment of a small group of San Francisco capitalists will be the ship's first ocean voyage.

‘‘‘If she can withstand the beatings of the waves,’ Comyn said yesterday, ‘the world will have to recognize that concrete vessels are a success and are entitled to place in the front ranks of ships.’’

Commenting editorially upon the launching of the *Faith*, the *San Francisco Chronicle* of March 15 said:

FIRST BIG CONCRETE SHIP SUCCESSFULLY LAUNCHED

San Francisco Builder's Faith in *Faith* is Justified When Huge Stone Vessel Slides Into Water

‘‘The launching of the hull of the *Faith*, the world's record-size concrete ship, was an unqualified success. On the waters of San Francisco bay now floats the largest stone vessel ever devised by the ingenuity of man. The wonder of the drifting iceberg of mountainous proportions is surpassed by this mammoth structure of sand, stone and cement. The lesson of the stone jar floating in a washbasin has been applied to the construction of an ocean-going liner.

‘‘It is another proof of the truth of the city's unofficial slogan, ‘San Francisco Knows How.’ Elsewhere, and before the *Faith*, they have built concrete ships, but they were of such limited dimensions and weight as to afford no guarantee of success when attempted on a larger scale. While Norway was building such vessels in hundreds of tons, San Francisco undertook to build them of tonnage running into as many thousands. Indeed, the new plans were on so enormous a scale as to make the venture an adventure in shipbuilding.

‘‘New problems not present in the Norwegian method of construction had to be faced, and by men whose life business had not been shipbuilding. But if they were short on shipyard knowledge they were long on the subject of concrete. They had only to be told what strains would be imposed upon a vessel of a given size when plowing through rough seas to work out the necessary thickness of hull and the extent of steel reinforcements.

"With these calculations in hand, the rest was easy and they went ahead. While regular shipping experts were spending months and months preparing plans for a 3500-ton hull, the San Francisco Shipbuilding Company was organized and built a 5000-ton concrete vessel.

"And as the work proceeded their confidence progressed through various minor doubts to absolute certainty in the success of their efforts. If ever a vessel was built of optimism, it was the aptly named *Faith*, but it has been the enlightened optimism of highly specialized knowledge. In the beginning the ship was to be given a trial by having the hull filled with coal and towed to Seattle. As the work advanced, this precaution was deemed to be unnecessary, and now the hull is to be towed to the Union Iron Works, where the work of installing the machinery will be begun at once.

"There may be many a slip twixt the slips and the ship, but so far as specially skilled designers and calculators can work it out, the *Faith* is already an assured success. The really great thing has been done, a greater concrete vessel than was ever dreamed of a few years, nay a few months, ago, has been successfully launched. The rest is a matter for the engineers and finishers, for men who know just what horse-power is necessary to propel a vessel of a given size and weight a given speed.

"This new venture means a big thing to the Nation, for it means that vessels of any size, in any number, can be built here in San Francisco without taking from the skilled labor required for constructing other vessels elsewhere. If the building of more ships is one of the first essentials of winning the war, then San Francisco is to figure as one of the great forces in the future victory. Indeed, nowhere else is there the combination of circumstances favorable to the construction of so many concrete vessels in so short a period of time.

"What this all means to San Francisco it would be difficult to summarize. We know that concrete ships can be built cheaper than those of wood and at half the cost of steel; that they are more likely to stand the strain of shot and shell; that they do not wear out nor rust out and can be kept in repair at a comparatively trifling expense. If we are to become the great center of the building of such craft our port will expand and with it all our industries and our population.

"Always on the map of the world as the gateway between the East and the West, San Francisco will be painted larger than ever now that she has launched the greatest concrete ship afloat and is preparing to build them even larger and in quantities limited only by the national demand."

One shout which rose above the cheers as the flag-bedecked *Faith* nodded gently in the water expressed the thought in every mind.

"There goes your Kultur, Kaiser!"

WHAT THE PRESS SAID

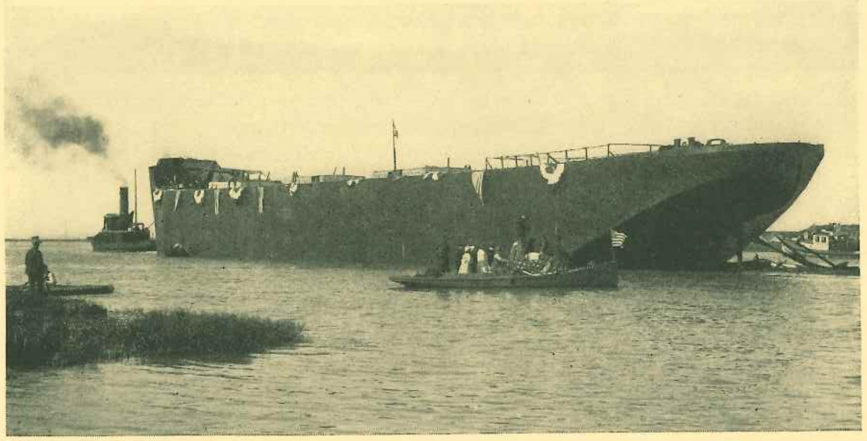
Through associated press affiliations, hundreds of newspapers throughout the country on March 15 repeated the story of the successful launching of the *Faith*. Among the most interesting comments are the following editorials:

A REINFORCED CONCRETE SHIP

(An editorial from the Washington, D. C. Herald, March 16, 1918)

"Thursday afternoon at Redwood City, Cal., the steamship *Faith* was launched. It was the first ocean-going reinforced concrete steamship built in America.

"This is the age of concrete. If anyone had told you even a dozen years ago that ocean-going steamers would be built of reinforced concrete you would have been like the engineer of the Westward Ho train. When an Indian lassoed the iron monster he was dragged for a mile or so. The engineer remarked, 'Redman, I admire your nerve, but damn your judgment.'



The *Faith* in tow on the way to the place where she is to be fitted with engines for her maiden voyage.

"And in the waters of the Pacific there lies at anchor waiting the machinery the hull of the first reinforced concrete steamer. Soon it will be riding the waves and defying the submarine. With a timber and steel famine, perhaps in the concrete ship we will find a substitute out of which to build our merchant marine."

CEMENT SHIPS

(Editorial from the Tampa, Fla., Tribune, March 16, 1918)

‘‘We have ceased doubting anything! There is the case of the men who knew steam could never be made to move a wheel; the learned dissertation to prove that a steamship could not cross the ocean — carried in the ‘Savannah’ the first steamship to Cross the ocean; the belief that a heavier than air machine could not be made to fly successfully; the confidence that wireless telegraphy was an impossibility; the proof that the human voice could not be mechanically reproduced; and all the other great discoveries and attainments of the past hundred or more years.

‘‘So, today, when they announce the successful launching of cement ships of a greater dead weight than the same tonnage in steel, we take off our hat to science and engineering, and declare that presently we believe they will find a way to make motion perpetual.

“A poured ship complete in six weeks! and thirty-four more to come in eighteen months.

‘‘That’s almost like carving them out of solid stone — only quicker.

‘‘Teredo will bore in vain against its bottom; and by the time they are ready to carry their cargoes across the seas, may that last most diabolical worm of destruction, the German sub-torpedo, have met its master and been overthrown. With the forests, the mines and the quarries of the land contributing their bit to the shipbuilding program, we should soon lead the world in ships and in tonnage.”

TESTING THE CONCRETE SHIP

Builders Are Not Running Anything Like the Risks Some People Imagine

(Editorial from the San Francisco Chronicle, March 16, 1918)

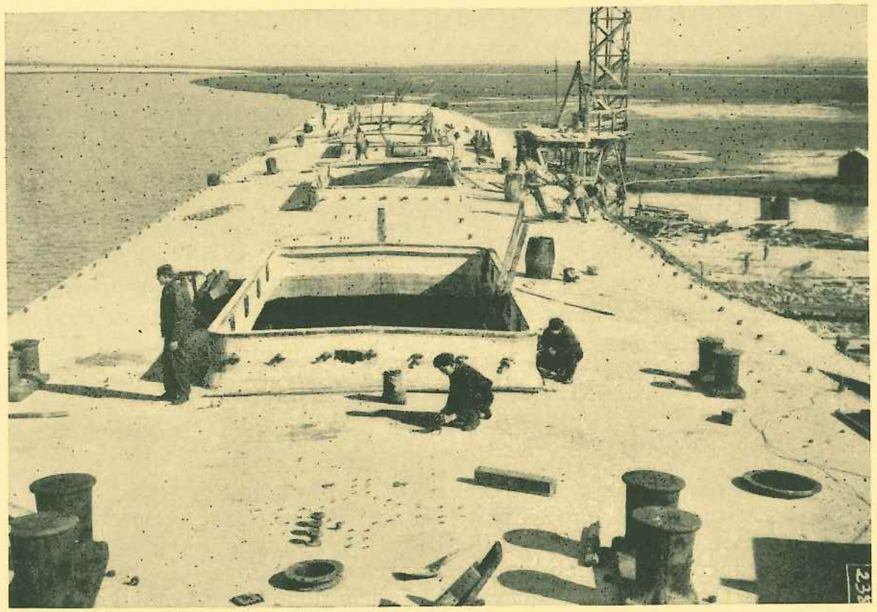
‘‘Much is heard of the crucial tests to which the new giant concrete ships are to be subjected, but, though to err is human, there seems very little reason for entertaining any serious doubts as to the results of the trial. If the concrete wall is not exactly a standard for the strain of the sides of a cement vessel, there is a fairly good gauge in the concrete floors of a frame building. The sides of a ship are called upon to bear a strain nearer to that of the floors than the walls of a concrete building.

‘‘But, whatever the degree of accuracy in these entirely new calculations, there will be not the slightest fears of booking a passage for an ocean voyage on a concrete liner.

‘‘It will not be as was the case in those early days when the gravest misgivings existed in the popular mind as to taking a trip on an iron vessel. For centuries iron had been the symbol of that which sinks quickest in water, and it was some time before people would be persuaded that it was the displacement and not the wood which kept large ships afloat.

‘‘Since then we have been accustomed to seeing metals doing what was formerly done by wood, and even paper doing what was previously done by iron. In other words, we have been trained to understand principles and not be deceived by appearances and preconceptions.

‘‘We have experimented with so many things in so many ways that more often than not the new venture is not an experiment but the nearest thing to a certainty. And even when doubts are still entertained they are the enlightened doubts as to factors beyond the area of observation and not the superstitious fears of crude ignorance.



Deck view on the reinforced concrete steamship ***Faith***, looking toward the stern.

‘‘The enlightened age which produced the concrete ship will find the enlightened crews willing to undertake a voyage in her.

SHIPS OF STONE

(Editorial from Public Ledger, Philadelphia, March 17, 1918)

“Concrete barges are no novelty, but the project to build large steam-propelled vessels for ocean traffic of this material is still so new that to the lay mind it is startling, to say the least. The undertaking, however, has gone far beyond the ‘project’ stage. An elaborate engineering organization has been built up under the United States Shipping Board, and the launching of an actual concrete hull for a 5000-ton steamship on the Pacific coast last week marks the progress of an experiment of far-reaching importance and interest. For the Pacific coast ship is only the first of a series of similar vessels to the construction of which the Government is definitely committed. A yard on the Atlantic coast has already been secured and is to be used for the building of concrete ships after the Government's own designs, and it is the expectation of the engineering experts that the middle of the coming summer at the latest will see the definite determination of the question whether ships of stone are going to become a material factor in overcoming the submarine menace.

''Most of the problems connected with the building of concrete ships are unique and have called for special investigations and experiments that have little or no parallel in the construction of steel and wooden ships. On the other hand, some of the inquiries that are under way, especially those which have to do with the strains in concrete ships in the water and the stresses to which different parts of the hull are subjected under different conditions, are pioneer work the results of which are likely to prove of the highest value in all departments of marine designing and construction. Meanwhile, the untechnical public will watch for details of the actual performance at sea of the ships of stone with deep interest and not a little impatience. They may be regarded as making one of the most striking chapters in the romance of modern science.''

"FAITH" IN CONCRETE

(*Editorial from New York Tribune, March 16, 1918*)

''The concrete cargo boat launched on Thursday at San Francisco was a relatively bold experiment. It is the first large concrete vessel yet constructed. The largest hitherto was of not much over 600 tons.

''Yet concrete has been long used for sea walls, for small lighters and the like, so that its use in salt water is not a novelty. A small concrete boat was actually constructed nearly three-quarters of a century ago.

''It is evident enough from this that if the concrete boat had any very striking advantages it would have been tried out before this. It is now almost wholly an emergency measure.

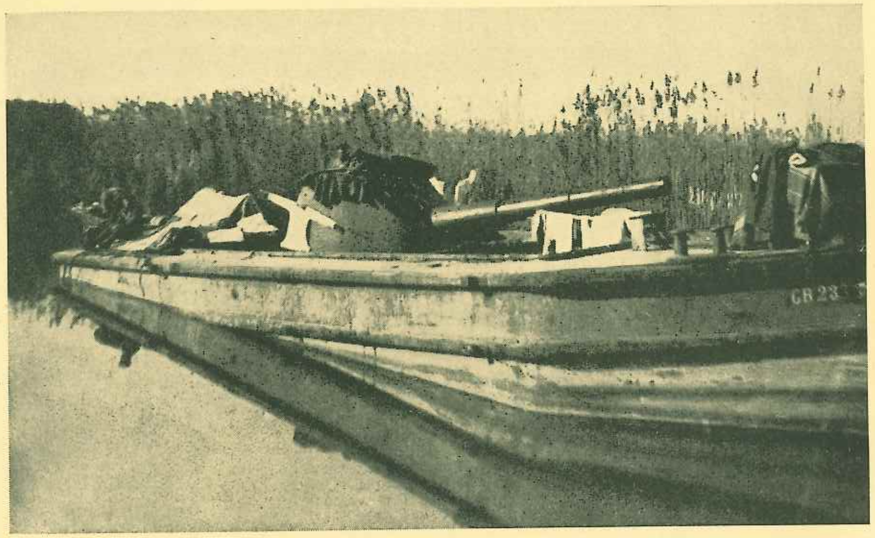
''Its great merit is that it requires little steel, little skilled labor, and may be built almost anywhere in almost any quantity for which engines and boilers can be found.

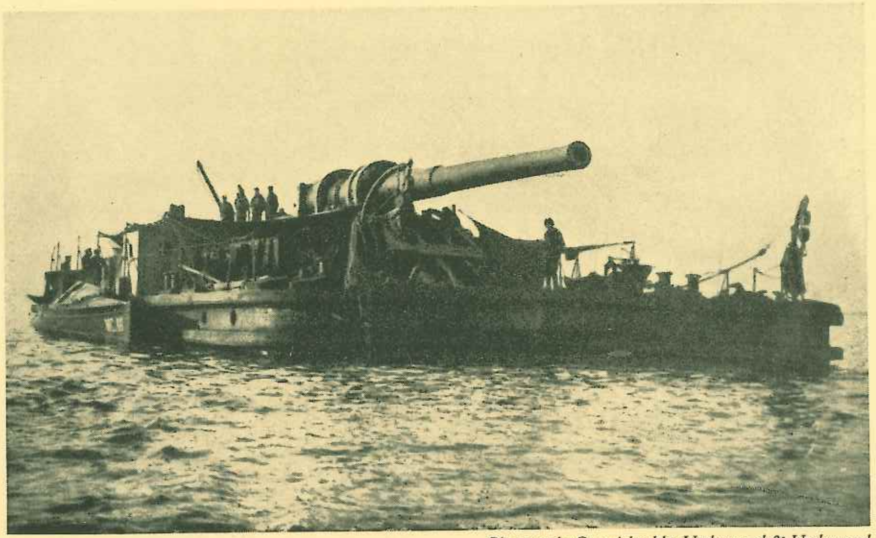
"And for a certain type of vessel the concrete hull might prove of high endurance and serviceability.

''The San Francisco enterprise was begun last spring. It is a matter of regret that the vessel could not have been completed last fall. By now we might have had a whole concrete cargo fleet."

The *Faith* is a visible expression of the well founded confidence of reinforced concrete engineers that concrete ships will help to solve the shipping problem.

CONCRETE BARGES IN THE EUROPEAN WAR





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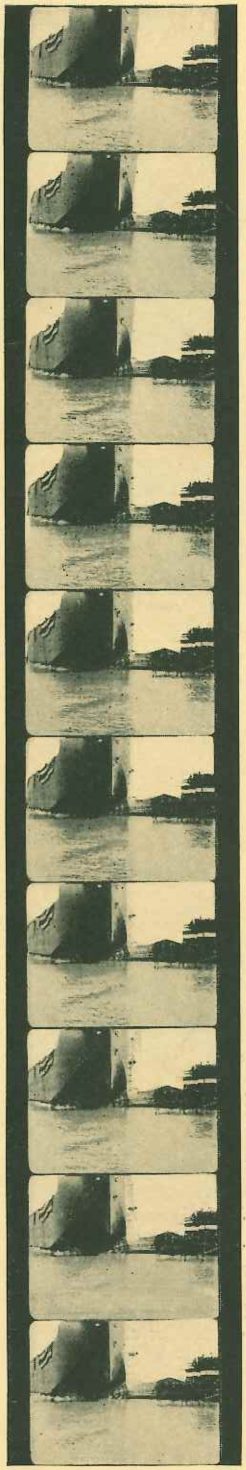
Concrete vessels are already solving problems in the European war. The above views show concrete barges on the River Piave, Italy, along the Italian battle front, upon which heavy naval guns are mounted for offensive and defensive operations against the Austrian troops. It is said that Italy is making use of many such floating concrete forts. There certainly can be no question as to the practicability of concrete for ships when concrete barges stand up in such severe service as is suggested by the above pictures.



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